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WSRC-RP-93-1043  
Revision 1  
September 2, 1993

**UNITED STATES DEPARTMENT OF ENERGY**

**SAVANNAH RIVER SITE**

**FINAL RECORD OF DECISION  
REMEDIAL ALTERNATIVE SELECTION**

**FOR**

**H-Area Hazardous Waste Management Facility (U)**

Prepared by  
WESTINGHOUSE SAVANNAH RIVER COMPANY  
SAVANNAH RIVER SITE  
AIKEN, SC 29802

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PREPARED FOR THE US DEPARTMENT OF ENERGY UNDER

CONTRACT DE-AC09-89SR18035

## **DECLARATION FOR THE FINAL RECORD OF DECISION**

### ***Site Name and Location***

H-Area Hazardous Waste Management Facility (HWMF)

Savannah River Site

Aiken County, South Carolina

Appendix H of the Federal Facility Agreement (FFA) lists this unit as the H-Area Hazardous Waste Management Facility (Building Numbers 904-44G, 904-45G, 904-46G, and 904-56G).

### ***Statement of Basis and Purpose***

This document presents the selected final preventive action for the H-Area HWMF Operable Unit at the Savannah River Site (SRS), which was developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record File for this unit.

### ***Description of the Selected Remedy***

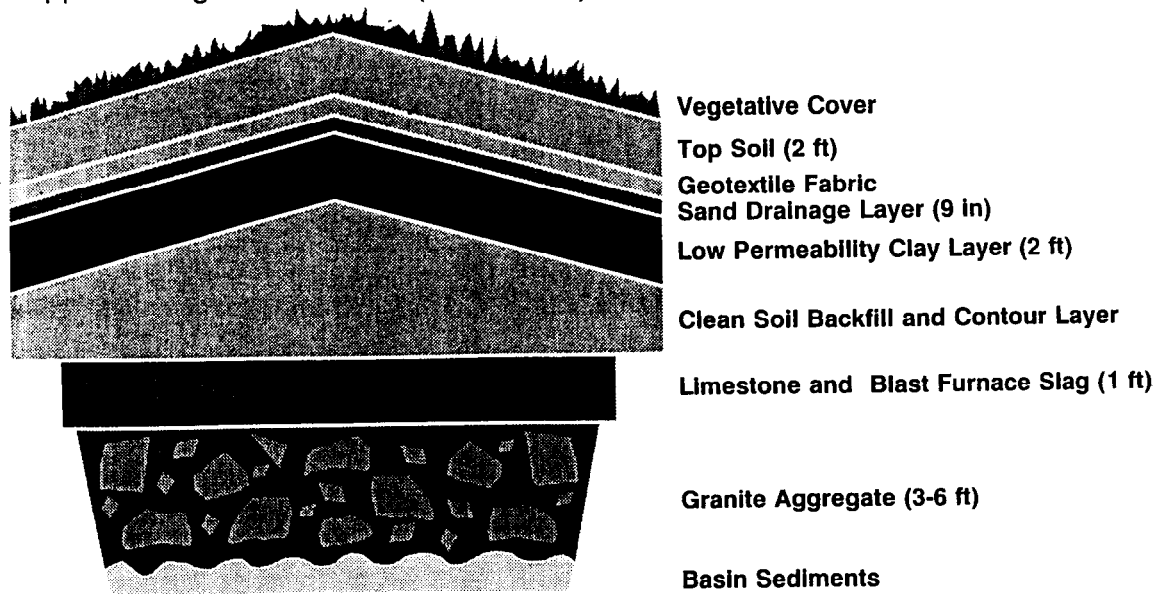
The selected final action remedy involved the stabilization and placement of all contaminated materials under a low permeability cap. This remedy prevents physical exposure to contaminants and mitigates further migration of

contaminants to the groundwater by minimizing a liquid medium pathway (rainwater percolation) for transport.

No further action is necessary for the unit. However, as a condition of the RCRA Hazardous Waste Permit, post closure groundwater monitoring is required to verify that no unacceptable exposures to potential hazards posed by conditions at the operable unit occur in the future.

The major components of the preventive action included:

- 1) Elimination of free liquids by removing liquid waste and solidifying the remaining waste and residues,
- 2) Stabilization of the remaining wastes to a load bearing capacity sufficient to support the cover system,
- 3) Placement of a final cover over the surface impoundment. The cover consists of a layer of backfill, a nine inch sand layer, a two foot layer of compacted kaolin clay, a geotextile fabric, topped with two feet of topsoil to support a vegetative cover. (See below)



4) The H -Area HWMF is being routinely inspected for a minimum of 30 years to verify the integrity of the cover system, fences, signs, etc. Any necessary repairs to the cap will be made as part of the maintenance program.

5) Access to the H-Area HWMF is restricted to authorized personnel with appropriate training on applicable requirements. The survey plat and records associated with deed restricted use of the H- Area HWMF have been filed with Aiken County, SC.

***Declaration Statement***

Previous action taken at the H-Area HWMF was under a RCRA Closure Plan approved by the state of South Carolina and was protective of human health and the environment. Therefore, no further remedial action is necessary under CERCLA. To ensure continued protection of human health and the environment, this remedial action will be reviewed every 5 years, consistent with the requirements of the NCP.

September 7, 1993  
Date

Jessie M. Roberson  
Jessie M. Roberson  
Acting Assistant Manager for Environmental  
Restoration and Solid Waste  
U.S. Department of Energy

September 10, 1993  
Date

Patrick M. Tobin  
Patrick M. Tobin  
Acting Regional Administrator,  
U.S. Environmental Protection Agency  
Region IV

# **SUMMARY OF FINAL ACTION REMEDIAL ALTERNATIVE SELECTION**

**FOR**

**H-Area Hazardous Waste Management Facility (U)**

**Prepared by  
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**DECISION SUMMARY  
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## **I. Site and Operable Unit Names, Locations, and Descriptions**

The Savannah River Site (SRS) occupies approximately 300 square miles (483 km) adjacent to the Savannah River, principally in Aiken and Barnwell Counties of South Carolina (Figure 1). SRS is a secured facility with no permanent residents. The site is approximately 25 miles (40 km) southeast of Augusta, Georgia, and 20 miles (32 km) south of Aiken, South Carolina. The average population density in the counties surrounding SRS ranges from 23-560 people per square mile (60-1452 per square km) with the largest concentration in the Augusta, Georgia, metropolitan area. Based on 1980 census data, the population within a 50-mile (80 km) radius of SRS is approximately 555,100.

SRS is owned by the United States Department of Energy (DOE). Westinghouse Savannah River Company (WSRC) is the manager and operating contractor for DOE. SRS produces tritium, plutonium, and other special nuclear materials for national defense. The site also provides nuclear materials for the space program, and conducts medical, industrial, and research efforts. The H-Area HWMF is a source specific operable unit within the H-Area Fundamental Study Area. The H-Area HWMF consists of three unlined, earthen surface impoundments located in the center of SRS, southwest of Road E and north of road 4 approximately 6 miles (10 km) from the nearest site boundary (Figure 2).

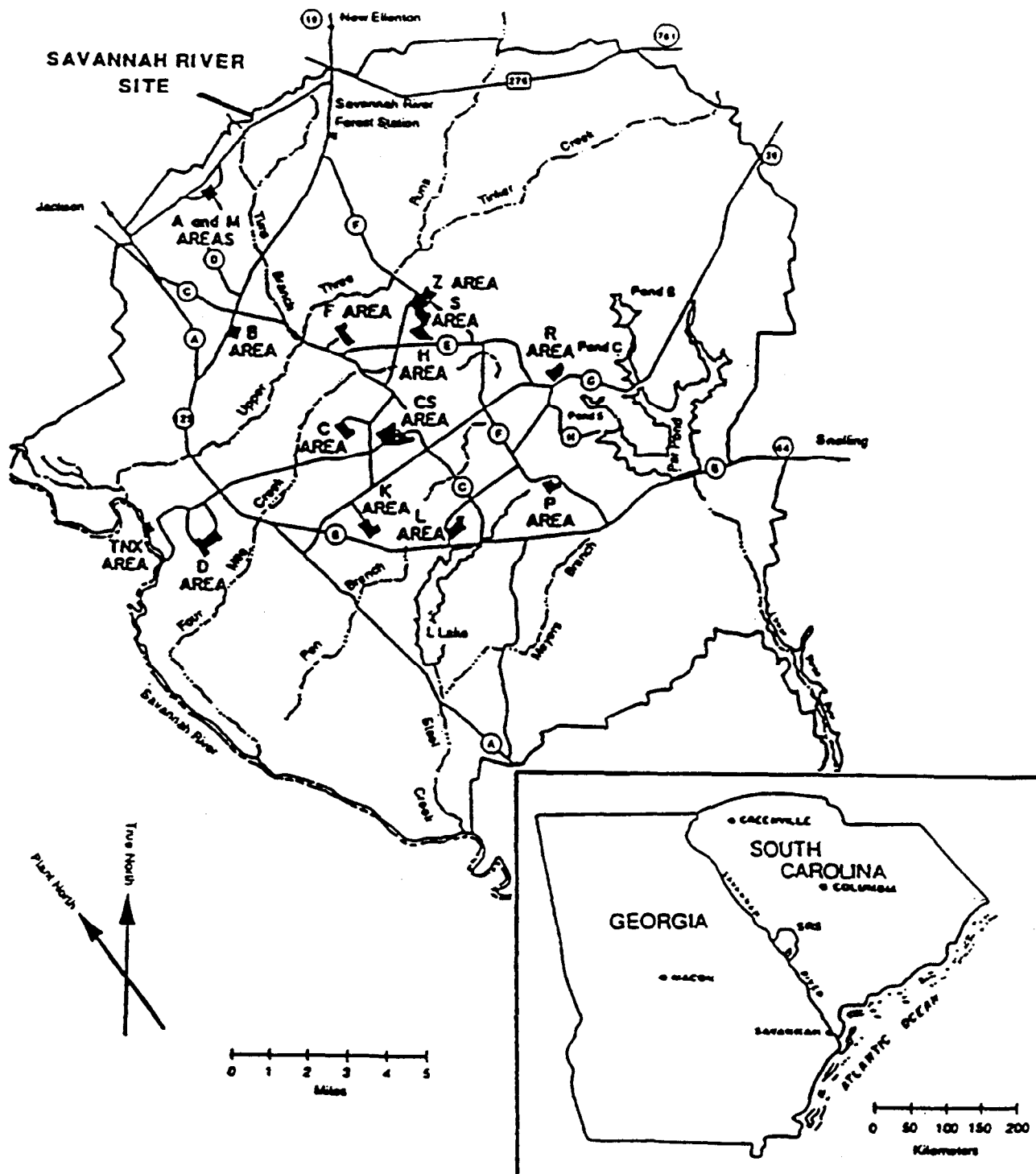


Figure1 Location of the Savannah River Site (SRS)  
(Source: Modified from the **Savannah River Environmental Report**, 1990)



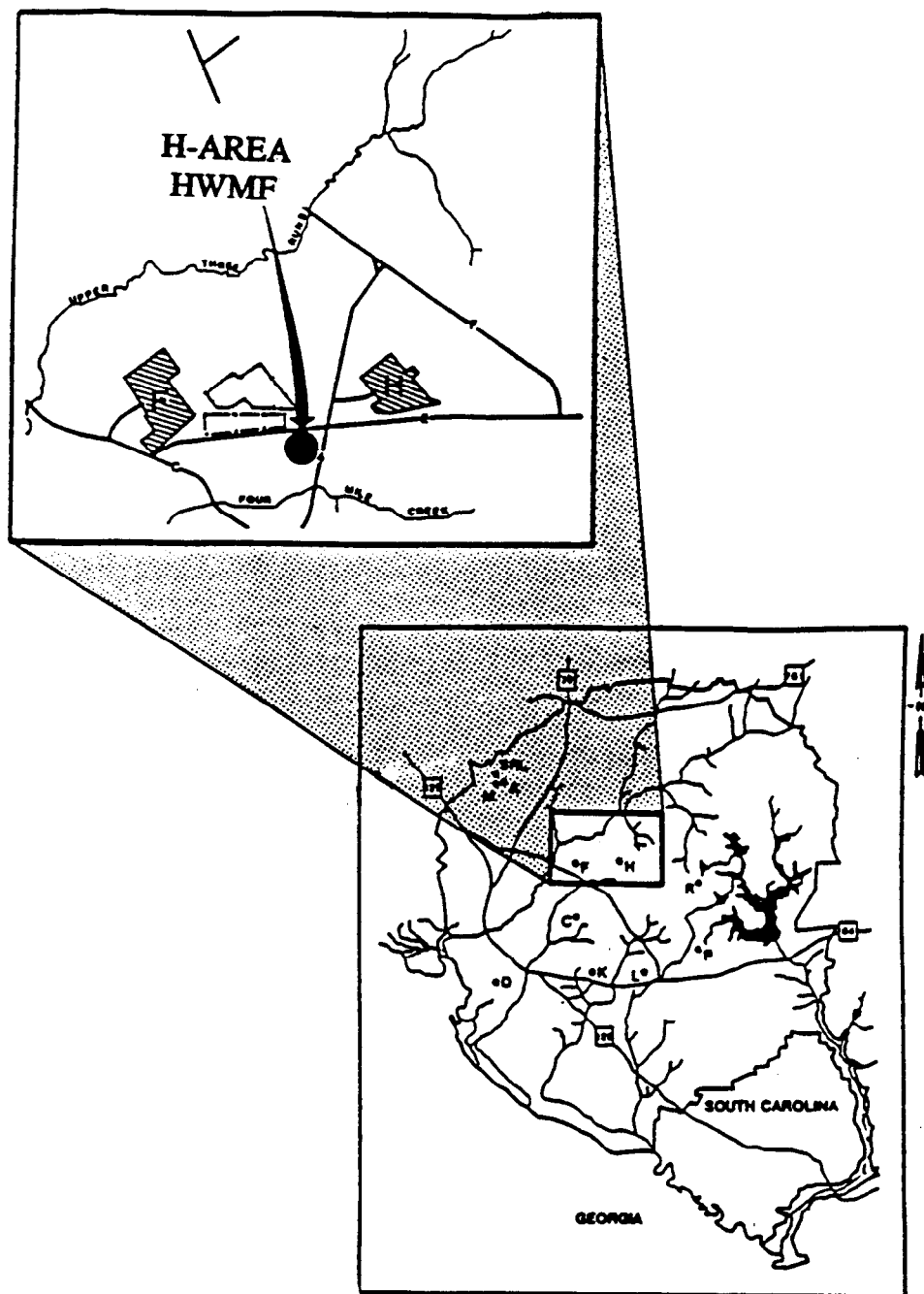


Figure 2 H-Area HWMF  
(Source: Modified from the EID for the H-Area Seepage Basins, 1987)

## **II. Operable Unit History and Compliance History**

### ***Operable Unit History***

The H-Area HWMF operated from 1955 until November 7, 1988. The original H-Area HWMF consisted of basins H-1, H-2 and H-3 and operated from 1955 to 1962. In 1962 H-3 was replaced by H-4.

The dimensions and volumetric capacity of the basins were as follows:

H-1: 90 ft x 240 ft x 9 ft, 1.1 million gallons

H-2: 110 ft x 460 ft x 9 ft, 2.8 million gallons

H-3: 350 ft x 480 ft x 17 ft, 9.4 million gallons

H-4: (130-430) ft x 2400 ft x 8 ft, 22.6 million gallons

At the time of closure, the H-Area HWMF (basins H-1, H-2, and H-4) had a combined maximum operating capacity of 26.5 million gallons of wastewater.

The H-Area HWMF received waste effluents from H-Area chemical separation facilities processes such as the nitric acid recovery unit, waste storage system evaporator overheads, and general purpose evaporator overheads.

The H-3 basin was not a RCRA regulated unit but was identified as a RCRA 3004(u) unit requiring investigation and remediation. It was decided to incorporate basin H-3 into the RCRA closure.

The four basins were closed by dewatering, physically and chemically stabilizing the remaining sludges and placing a protective multi-layer cover system (Figure 3) over them reduce rainwater contact with basin bottoms.

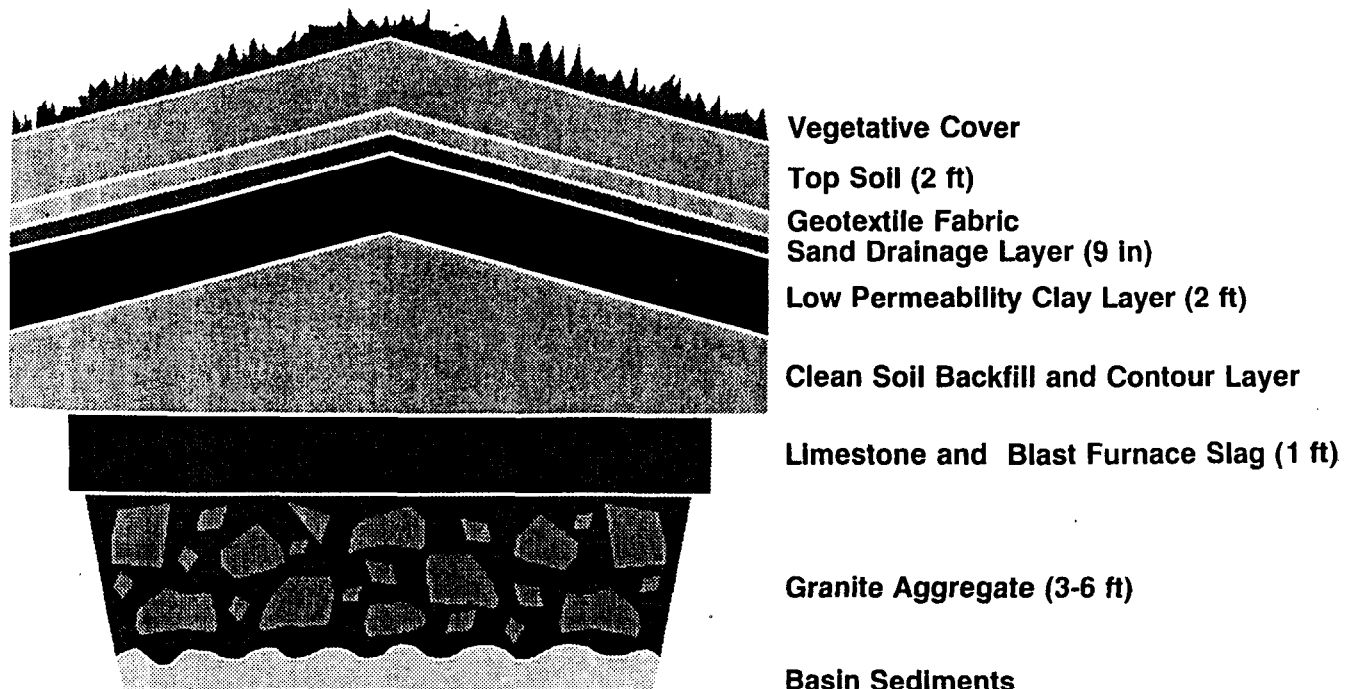


Figure 3 H-Area HWMF Cap Cross Section

### ***Compliance History***

Preventive actions at the H-Area HWMF were conducted pursuant to the requirements of the Resource Conservation and Recovery Act (RCRA) per Settlement Agreement 87-27-SW. In 1988, a RCRA Closure Plan was submitted to the South Carolina Department of Health and Environmental Control (SCDHEC). The closure plan underwent several revisions prior to approval by SCDHEC in 1989. Closure of the unit was begun in 1989 and completed in May 1991. The H-Area HWMF was certified closed in July 1991. In October 1991, the closure certification was accepted by SCDHEC as being in compliance with RCRA requirements. A RCRA Part B Permit Application for Post-Closure Care was submitted in December 1990 and a Hazardous Waste Permit was effective November 1992.

Closure activities specifically included removal of standing water remaining in the basin; stabilization of the basin sludge with a layer of granite, limestone, and blast furnace slag; construction of a low permeability cap over the basin; and restoration of the area.

Preventive activities at the H-Area HWMF became subject to CERCLA when the entire SRS facility was placed on the National Priorities List (NPL) in December 1989. The H-Area HWMF is a source-specific operable unit within the H-Area Fundamental Study Area.

### **III. Highlights of Community Participation**

The public review period that ran from 18 June 93 - 2 August 93. SCDHEC submitted comments on the Proposed Plans which have been incorporated into this ROD , where appropriate.

### **IV. Scope and Role of Operable Unit Within the Site Strategy**

The selected remedy involved the placement of all contaminated materials under a low permeability cap. The remedy prevents physical exposure to contaminants and mitigates further migration of contaminants from the H-Area HWMF to groundwater by minimizing a liquid medium pathway (rainwater percolation) for transport.

### **V. Summary of Operable Unit Characteristics**

Waste effluents from H-Area chemical separation facilities processes such as the nitric acid recovery unit, waste storage system evaporator overheads, and general purpose evaporator overheads were discharged to the H-Area HWMF. Significant amounts of nitrate and caustic were received. Radioactive releases to these basins were greater than 99% tritium. Several studies were conducted to characterize the subsoils. A 1984 soil coring study showed that approximately 90% of the radionuclides, cations, and anions were concentrated

within the top 1 foot of basin soil. The chemicals of concern at the H-Area HWMF are arsenic, barium, cadmium, lead, mercury, cobalt-60, copper, nickel, vanadium, zinc, tetrachloroethylene, gross alpha, gross beta, nitrate, radium-226, radium-227, tritium, iodine-129, strontium-90, technetium-99, uranium-233/234, and carbon-14.

## **VI. Summary of Operable Unit Risks**

Due to the previous H-Area HWMF RCRA preventive action, No Further Action under CERCLA is necessary for this unit. The RCRA preventive action is protective to human health and the environment and satisfies CERCLA requirements.

Contaminated sediments of the H-Area HWMF were stabilized in the basin during closure. The basin then was covered with a low permeability soil cap. Therefore, exposure through surface soil and sediment pathways is minimized because of this RCRA cap.

Preventive alternatives were developed for the H-Area HWMF based on effective technologies available at the time the RCRA Closure Plan was prepared. The RCRA Closure Plan was initially submitted to SCDHEC in early 1989 and was approved, following several revisions, in June 1989.

Options regarding the H-Area HWMF evaluated at that time included:

**Alternative 1**

No Action

**Alternative 2**

No Waste Removal, Waste Consolidation, Treatment, and Closure

**Alternative 3**

Waste Removal and Closure

Alternative 2 was selected within the RCRA closure process in 1988 as the most technically effective of the three alternatives for protection of human health and the environment. Closure of the H-Area HWMF was begun in 1989 and completed in July 1991. The closure certification was accepted by SCDHEC in 1991 as being in compliance with RCRA and state requirements. The closure is considered a final action under CERCLA.

## **VII. Explanation of Significant Changes**

There were no significant changes.

## **Appendix A**

### **References for Development of ROD Format**

- Weeks, Victor, 1993. "Regarding Records of Decision, F-Area and H-Area, Savannah River Site, Aiken, South Carolina", Letter to Goidell (DOE), Savannah River Site, Aiken, SC, April 14, 1993.
- EPA, 1991. "Guide to Developing Superfund No Action, Interim Action, and Contingency Remedy RODs," OSWER Publication 9355.3-02FS-3, U.S. Environmental Protection Agency, Washington, D.C., April 1991.
- WSRC, 1992. "Draft RCRA Facility Investigation/Remedial Investigation Program Plan," WSRC-RP-89-994, Chapter 15, Westinghouse Savannah River Company, Aiken, South Carolina, May 1992.



## **Appendix B**

### **Responsiveness Summary**

SCDHEC submitted comments. DOE concurs with these comments and they have been incorporated into this ROD, where appropriate. These comments are available for review in the Administrative Record File.